Appl. No. 09/802,687
Amdt. dated May 17, 2005
Response to Notice of Allowance February 22, 2005

PATENT

Amendment to the Claims:

This listing of claims will replace all prior versions, and listings of claims in the application:

Listing of Claims:

1. (previously presented) A comparative inspection device comprising:

a stage on which an object is mounted and which moves said object;

a detector for detecting an image of said object on said stage, said image comprising a plurality of inspection image regions, and for outputting an image signal;

an image processing unit for receiving said image signal, determining a plurality of offsets for said plurality of inspection image regions relative to a plurality of corresponding reference image regions, and determining a selected offset out of a set of offsets of the plurality of offsets, wherein said set has at least one high reliability offset of said plurality of offsets

a comparing unit for aligning an inspection image and a reference image using said selected offset and comparing said aligned inspection image and said reference image to detect a defect candidate; and

a feature extracting unit for extracting a feature of said defect candidate.

2. (previously presented) The comparative inspection device of claim 1, wherein said plurality of corresponding reference image regions are related to a time delayed plurality of inspection image regions, wherein said inspection image is an entire image of said object.

3. (original)   The comparative inspection device of claim 1, wherein said selected offset is used to align an entire inspection image and an entire reference image.

4. (original)   The comparative inspection device of claim 1, wherein a reliability of an offset of said set is a high reliability offset if a pattern on an image region of said first image regions is dense and is a low reliability offset if said pattern is sparse.

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5.   (original)   The comparative inspection device of claim 1 wherein a reliability of an offset of said set is evaluated by comparing said offset with a predicted offset from past variations of offsets.

6.   (previously presented) A comparative inspection device comprising:

an image detection means for detecting a plurality of inspection image regions;

an offset determining means for detecting offsets for said plurality of inspection image regions;

an offset selection means for determining a selected offset with a high reliability from said offsets;

an alignment means for aligning an entire inspection image and an entire reference image using said selected offset; and

a comparing means for comparing said aligned inspection image and said reference image to detect a defect candidate; and

a feature extracting unit for extracting a feature of said defect candidate.

7.   (previously presented) A method for comparative inspection, said method comprising:

detecting a first image of a specimen;

detecting a second image of a specimen;

dividing said first image into a plurality of divisional images;

dividing said second image into a plurality of corresponding divisional images;

calculating offsets between said plurality of divisional images and said plurality of corresponding divisional images;

determining an offset between said first image and said second image out of a set of offsets between said calculated offsets;

aligning said first image and said second image using said selected offset; and

comparing said aligned first image and said second image to detect a defect candidate.

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8-10. (canceled).

11. (currently amended) A method according to the claim 7 wherein, when images are received consecutively, full-image offset reliability of said image offset for said first image is evaluated and, if said full-image offset reliability is low, said first image is aligned using a past offset having a high full-image offset reliability.

12. (currently amended) A method according to the claim 7 wherein, when images are received consecutively, if an evaluation of full-image offset reliability for said image offset determines that full-image offset reliability is high, said image offset is stored as reference data for subsequent image alignments.

13. (currently amended) A method according to the claim 7 wherein, when images are received consecutively, full-image offset reliability is determined by comparing collected past offsets with high full-image offset reliability with said image offset.

14-21. (canceled).

22. (currently amended) A method for detecting defects in a semiconductor device, said method comprising:

dividing an inspection image of said semiconductor device obtained by capturing an image of said semiconductor device into a plurality of inspection sub-images;

dividing a reference image of said semiconductor device obtained by capturing an image of said semiconductor device into a plurality of corresponding sub-images each of which correspond to one of said inspection sub-images;

forming a plurality of sub-image sets, each sub-image set comprising one of said inspection sub-images and a corresponding one of said corresponding sub-images;

calculating a plurality of offsets for said plurality of sub-image sets;

determining an image offset between said inspection image and said reference image from said calculated plurality of offsets;

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aligning said inspection image and said reference image using said determined image offset; and

comparing said aligned inspection image and said reference image to detect a defect candidate.

23-26. (canceled).

27.   (previously presented) A method according to the claim 22 wherein an offset of said plurality of offsets is determined using a correlation matrix for a sub-image set of said plurality of sub-image sets.

28.   (previously presented) A method according to the claim 27 wherein said offset is a selected offset when said correlation matrix has a largest value above a predetermined threshold.

29.   (previously presented) A method according to the claim 22 wherein said determining said image offset using selected offsets, comprises using correlation matrices associated with said selected offsets to determine a composite correlation matrix, and using said composite correlation matrix to determine said image offset.

30.   (previously presented) A comparative inspection device of a specimen on which a pattern is formed, said device comprising:

a detector, for receiving a current image of said pattern formed on said specimen;

an image processing unit for receiving a current image of said pattern from said detector and determining an offset between said current image and a corresponding previously-detected image from a plurality of offset information between plural portions of said current image and a plural portions of said corresponding previously-detected image; and

a defect inspection unit which aligns said current image and said corresponding previously-detected image by using said determined offset and compares said aligned current image and said corresponding previously-detected image to detect difference between said aligned current image and said corresponding previously-detected image as a defect.

31.   (previously presented) A comparative inspection device according to the claim 30 wherein said offset is used in determining an alignment offset between said current image and said corresponding previously-detected image.

32. (canceled).

33.   (previously presented) The comparative inspection device of claim 30, further comprising a delay memory for storing said corresponding portion.

34-38. (canceled).

39.   (currently amended) A method according to the claim 7, further comprising extracting a feature of said defect candidate.

40.   (currently amended) A method according to the claim 22, further comprising extracting a feature of said defect candidate.

41.   (previously presented) A comparative inspection device according to the claim 30, further comprising a feature extracting unit for extracting a feature of said detected defect.